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DEER DAMAGE TOLERANCE SURVEY: MONITORING INSTRUMENT

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April 1986

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Human Dimensions Research Unit
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The deer damage tolerance surveys of 1975, 1977, 1978, and 1982 were conducted to identify and understand the relationship between factors that contributed to farmers' preferences for deer population levels (Brown et al. 1977, 1978, 1979, Decker et al. 1981). The model conceived at the initiation of the deer damage studies assumed that a change in deer population levels would result in a change in crop depredation, and that such changes would be perceived by farmers.[1] These two events would subsequently influence farmers' attitudes about deer and deer damage, ultimately changing farmers' tolerance of deer damage. The level of farmers' tolerance would be manifested in terms of their preferences for future deer population trends (Fig. 1).

The 1982 reanalysis of farmer willingness to tolerate deer damage in western New York shed some light on the relationship between deer population levels and farmer preferences for future deer population trends that had direct management implications. While it was found that increases in monetary loss from deer damage resulted in reduced tolerance of deer, there was a substantial percentage of farmers in areas with increasing deer populations who did not experience deer damage but nevertheless became increasingly intolerant of deer. Thus, farmers' perception of deer damage and their perception of deer population levels each affected their tolerance of deer. In management terms, this means that for DMUs where deer numbers predominantly influenced deer population preferences there is a greater need for population reduction to affect farmers' attitudes and tolerance of deer. On the other hand, there were DMUs where farmers were fairly tolerant of deer numbers, but intolerant of

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[1]The degree of farmer misperceptions of deer population trends was discussed by Mattfeld et al. (1984) and is a consideration in this chain of inference.

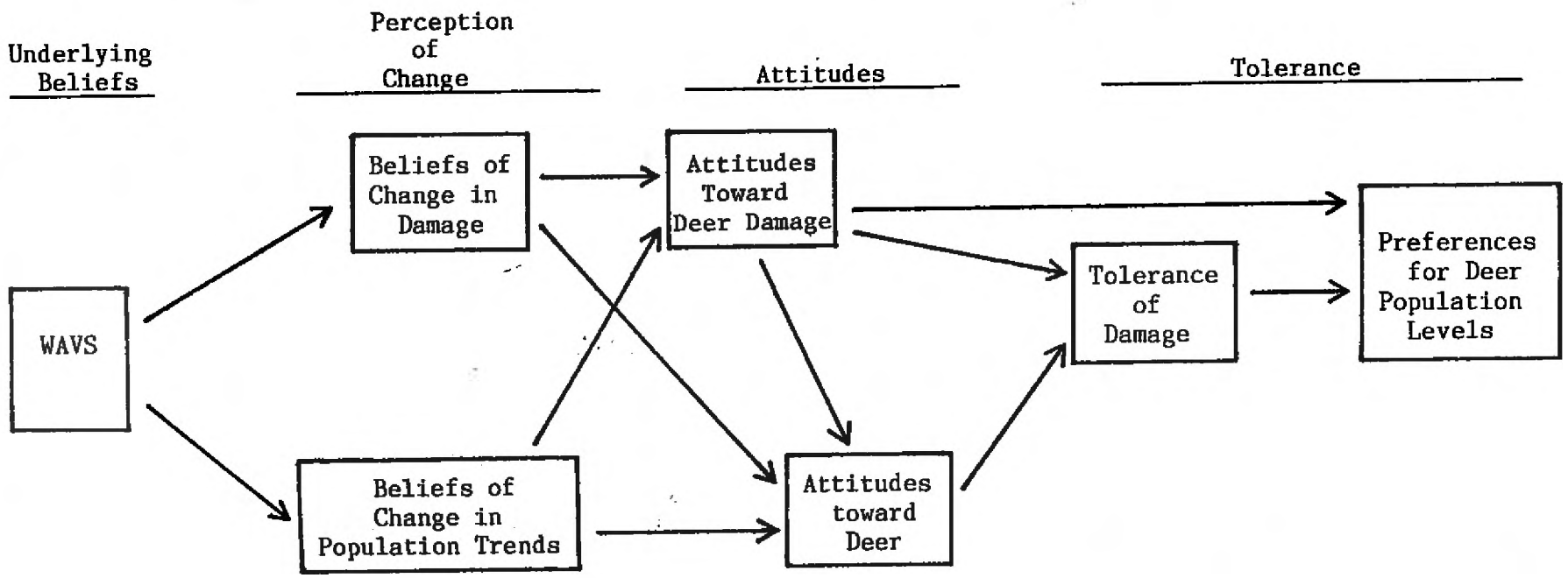

Figure 1. Model illustrating theoretical relationship between farmers' beliefs about wildlife and their preferences for future population trends.

monetary loss to deer. In these DMUs a reduction in the population level would probably have less impact on farmers' attitudes and tolerance than provisions for excluding deer from crops or other mitigation measures (Decker et al. 1982).

As deer population levels and crop losses to deer damage change over time it is important to monitor the effect these changes have on farmers' tolerance and how they ultimately influence preferences for deer population trends. This information is necessary to enable DEC to refine deer population management objectives such that populations are maintained at levels acceptable to farmers in particular DMUs.

The attached mail survey questionnaire was designed to monitor the dynamics of the relationship between deer damage and farmer tolerance over time. It is a modified version of the previous deer damage tolerance surveys.[2] The revised survey follows the same conceptual model used in past years so that data gathered in any future investigations can be compared with former studies. By standardizing the survey instrument it will be easier and less expensive to implement a continuing monitoring effort. Standardization of the instrument reduces printing costs, and simplifies coding, analysis, and reporting. Keeping the same instrument for use over time means that codebooks and computer programs will remain current and not require revisions. Further savings can be garnered from use of postcards (unit cost = 15 cents) as reminders in lieu of letters/envelopes (unit cost = 27 cents) (unmailed printed postcards can be returned to the post office for an 85% credit toward new postage supplies).

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[2]Note, there was no response from DEC concerning a January 1983 memo from Nick Sanyal and Daniel Decker to Bureau of Wildlife regarding a consolidated Deer Damage and Tolerance Study.

It is recommended that the Wildlife Attitudes and Values Scale (WAVS) be added to the survey instrument. The scale, used on surveys of landowners, hunters, organization leaders with deer interests, and the general public, has proven to be a reliable measure of personal wildlife beliefs (Connelly et al. 1984, Decker and Gavin 1985, Purdy and Decker, 1985, Purdy et al. 1985, Smolka et al. 1983, 1984, 1985). Beliefs regarding three basic domains have been identified by the WAVS: nonconsumptive/nonextractive uses of wildlife, consumptive/extractive uses of wildlife, and human tolerance of wildlife. Bureau of Wildlife, in its desire to expand its understanding of human beliefs regarding wildlife, has recommended use of the WAVS in future surveys of New York residents. It is therefore strongly suggested that the WAVS be included in the mail questionnaire survey to monitor human tolerance of deer and deer damage. The information provided by this scale should help explain farmers' underlying wildlife beliefs which are strongly related to their perceptions of change in deer populations and their attitudes toward and tolerance of deer.

Surveys should be conducted at reasonable intervals to detect changes in deer tolerance and preference levels that are reflective of either a changing economic climate in agriculture or fluctuations in the deer herd. Experience has shown that mid to late winter (January-March) is the best time for a mail survey of farmers. Sampling should be stratified by DMUs. To analyze differences among DMUs it is necessary to select 300 cases per stratification (DMU).

This questionnaire solicits the information necessary for a long-term monitoring effort in a concise and cost-efficient manner. If DEC decides to conduct this survey on a regular basis, it is recommended that Project W-146-R staff assist in its implementation to assure use of appropriate data collection techniques; this can be accommodated under Job VI-3.

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DEER POPULATION AND DAMAGE SURVEY

1. During the past 12 months, what was the PRIMARY agricultural use of your land? (Please circle the number of your answer.)

   1. Livestock, dairy or poultry
   2. Tree fruits
   3. Small fruits
   4. Grapes
   5. Vegetable cash crops
   6. Grain cash crops (e.g., corn, wheat)
   7. Forest products (e.g., woodlots, Christmas trees, nuts, syrup)
   8. Other (please specify) _____

2. During the past 12 months did you grow fruit or grapes (regardless of whether these were primary land uses)? (Circle one.)

   1. Yes
   2. No

3. What general trends have you noticed in the deer populations around your land during the past ("time period")? (Circle only one.)

   1. Deer have increased in number
   2. Deer have decreased in number
   3. Deer populations have not changed noticeably
   4. Don't really know

4. Please list below all the kinds of crops (including orchards, vineyards, plantations and timber) damaged by deer on your farm within the past 12 months and give us your best guess as to the dollar value of any loss incurred. If you don't know the exact amount, feel free to give an approximation. Please indicate also your estimate of the percent of crop value damaged.

Crop Damaged	Estimated Amount of Damage	Percent of Crop Value Lost
_____	$_____	_____%
_____	$_____	_____%
_____	$_____	_____%

5. What percent of the total value of all your crops was lost to deer during the past 12 months?

   _____%

6. How do you feel about the amount and kind of damage your agricultural crops received from deer in the past 12 months? (Circle only one.)

   1. Not aware of deer damage
   2. Negligible deer damage
   3. The amount of deer damage was tolerable
   4. The amount of deer damage was unreasonable

7. How has the amount of deer damage you experienced changed in the past ("time period")? (Circle only one.)

   1. Increased
   2. Decreased
   3. Stayed about the same
   4. Did not have damage either in _____ or _____?

8. Other than shooting deer, have you taken any steps within the past 12 months to control deer damage to your crops? (Circle one.)

   1. Yes
   2. No (Please go to Question 9.)

   If "Yes," what have you done and how much did it cost you for materials and labor? (Circle the numbers corresponding to the controls you have used within the past 12 months, then fill in cost estimates.)

Control Measures	Cost ($) Materials	Cost ($) Labor
1. Chemical repellents	$ _____	$ _____
2. Build or maintain deer fences:		
Maintenance	$ _____	$ _____
Construction (costs within past 12 months	$ _____	$ _____
3. Devices to scare deer	$ _____	$ _____
4. Other (specify: _____)	$ _____	$ _____

9. Generally, how do you feel about having deer in your neighborhood? (Circle one.)

   1. I enjoy having deer around AND their aesthetic value was worth my crop loss to deer damage within the past 12 months.
   2. I enjoy having deer around BUT their aesthetic value was **NOT** worth my crop loss to deer damage within the past 12 months.
   3. I generally regard deer as a nuisance regardless of the amount of crop damage they cause; I could get along without any deer.
   4. No particular feelings about deer.

10. The Department of Environmental Conservation is updating its management plan for deer population levels in your area. Please indicate below whether you would like them to increase, decrease, or leave deer populations in your area at their current level. (Circle one.)

   1. Moderately increase deer populations
   2. Slightly increase deer populations
   3. Leave deer populations similar to present levels
   4. Slightly decrease deer populations
   5. Moderately decrease deer populations

To interpret your answers to previous questions better, we need some background information on how much you depend upon your rural property for a living. The following information you provide will be kept strictly confidential, and will not be associated with your name.

11. Approximately what percent of your household's net income was derived from the sale of agricultural or timber products from land you owned or rented in the past 12 months? (Circle one.)

   1. Less than 10 percent
   2. 10-25 percent
   3. 26-50 percent
   4. 51-75 percent
   5. 76-100 percent

12. Please indicate the Town or Township in which your farm or rural property is located:

Town of _____

Please use this space for any additional comments you wish to make:

_____

Thank you for your cooperation.

TO RETURN THIS QUESTIONNAIRE, simply seal it and deposit it in any mailbox. The postage has been provided.

Optional Addition:

People differ in the ways they respond to wildlife. Some of these ways are listed below. Please indicate how you feel about the following by circling the number that best reflects your agreement or disagreement with each statement.

IT IS IMPORTANT TO ME PERSONALLY:

	Strongly Agree			Neither			Strongly Disagree
That I talk about wildlife with family and friends.....	1	2	3	4	5	6	7
That I observe or photograph wildlife.....	1	2	3	4	5	6	7
That I tolerate ordinary wildlife nuisance problems.....	1	2	3	4	5	6	7
That I trap furbearing animals for the sale of furs or pelts.....	1	2	3	4	5	6	7
That I consider the presence of wildlife as a sign of the quality of the natural environment.....	1	2	3	4	5	6	7
That I hunt game animals for recreation...	1	2	3	4	5	6	7
That I see wildlife in books, movies, paintings, or photographs.....	1	2	3	4	5	6	7
That I tolerate ordinary levels of property damage by wildlife.....	1	2	3	4	5	6	7
That I express opinions about wildlife and their management to public officials or to officers of private conservation organizations.....	1	2	3	4	5	6	7
That I know what wildlife exist in nature..	1	2	3	4	5	6	7
That I tolerate the ordinary risk of wildlife transmitting disease to humans..	1	2	3	4	5	6	7
That I hunt game animals for food.....	1	2	3	4	5	6	7
That local economies benefit from the sale of equipment, supplies, or services related to wildlife recreation.....	1	2	3	4	5	6	7
That I appreciate the role that wildlife play in the natural environment.....	1	2	3	4	5	6	7

	Strongly Agree			Neither			Strongly Disagree
That wildlife are included in educational materials as the subject for learning more about nature.....	1	2	3	4	5	6	7
That game animals are managed for an annual harvest for human use without harming the future of the wildlife population.....	1	2	3	4	5	6	7
That I tolerate the ordinary personal safety hazards associated with some wildlife.....	1	2	3	4	5	6	7
That I understand habits or behavior of wildlife.....	1	2	3	4	5	6	7

Appendix

COMMENTS ON THE OLD SURVEY INSTRUMENT
(Question numbers refer to 1982 Reanalysis Questionnaire)

Q1. Excluded. Specificity in crop data of limited use. Lack of reliable secondary data for comparison. Primary Land Use types are more informative.

Q2. Primary Land Use was shown to be an accurate, valid and reliable measure. Groupings shown in the new survey (Q1) are those suggested by our use of discriminant analysis. This question will simplify computations and will present a simpler task for respondents (i.e., consistent with Dillman's adaptation of social exchange theory).

Q3. Excluded. Of limited use now. Previous research has established the BT/SM-Respondent perception relationship.

Q4. Retain as is.

Q5. Excluded. Previous research has established the relationship with Q8, which is retained as is. Reliability analysis showed a Cronbach's alpha coefficient of 0.87 indicating that Q's 5 and 8 measured the same domain.

Q6. Retain as is.

Q7. Retain without reference to Question 1.

Q8. Retain with modification of the third choice ("in exchange for having deer around" is deleted).

Q9. Excluded. Data show low number of affirmative responses.

Q10a & b. Parts a and b have been combined by requesting a listing of cost control measures within the past "time period." The cost estimate was broken down by materials and labor to provide information consistent with current procedures used to estimate damage control costs.

Q11 & 12. Excluded. Low number of affirmative responses in all past studies. Change would have to be major to be of any significance. Possible reason to use once every 10 years.

Q13. Revised to incorporate the value of deer to farmers in relation to their level of deer damage experienced.

Q14. Retain as is.

Q15-19. Excluded. Low variation since 1975. Use once every 10 years.

Q20. Retain as is.

Q21. Retain as is.